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## SECURITY INFORMATION

*Aerojet* GENERAL CORPORATION

AZUSA, CALIFORNIA

AD NO. 11571  
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INFORMAL REPORT OF PROGRESS

TO: Head, Armament Branch  
Naval Sciences Division  
Office of Naval Research  
Washington 25, D. C. 17 April 1953

VIA: Bureau of Aeronautics Representative  
Pasadena  
c/o Aerojet-General Corporation  
6352 N. Irwindale  
Azusa, California

SUBJECT: Development of a Device for Mine-Sweeping

CONTRACT: Nonr-686(00)

PERIOD COVERED: 1 March through 31 March 1953

This is the tenth in a series of informal reports submitted in partial fulfillment of the contract.

AEROJET-GENERAL CORPORATION

*for* C. A. Gongwer  
Manager  
Underwater Engine Division

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## SECURITY INFORMATION

53AA-9232  
A-3132

I. OBJECTIVE

In accordance with Contract Nonr-686(00), as amended by Amendment No. 1, 1 December 1952, the following work is to be performed:

The Contractor shall (1) conduct research on pulsed-pressure signals; (2) design and construct an experimental vortex-ring generator of approximately prototype size for sea tests and development work; and (3) concurrently with the work required under (1) and (2), investigate the practical problems attending the use of such a device as a mine countermeasure and attempt to provide solutions to these problems, in order that the device may be readily applied to naval uses. This work shall include, but not necessarily be limited to, the following:

- A. Completion of the prototype design
- B. Construction of the prototype
- C. Mounting and testing of the prototype on a Navy-furnished vessel
- D. Concurrently with prototype development, the investigation of effects caused by nonvertical projection of the vortex, by motion of the generator during projection of the vortex, by the nature of the bottom, etc., upon the efficacy of the ring vortex in mine sweeping.

II. DESCRIPTION OF WORK

- A. No model testing was performed during this test period.
- B. Fabrication of the 1/8-scale vortex generator and barge has been completed, except for ballasting to obtain the desired displacement. Testing of this model will begin approximately 10 April. Direct injection of heated fuel will be attempted for the first time; heretofore, fuel has been sprayed into a heated pan to effect vaporization. Standard gasoline at 210°F and 100 psig will be used.
- C. Fabrication of the prototype generator is in progress. All components are expected to be assembled by 1 July 1953.
- D. Preliminary design of a barge framework has been completed. Particular attention has been paid to the basic load-bearing members which must withstand an acceleration of 1/2 g under a quick-acting force concentrated at the center of the barge. Drawings are now being prepared. Upon completion, these drawings will be transmitted to the Office of Naval Research, together with a structural analysis and specifications. The barge is designed for a displacement of 600 tons, with provision for shifting the generator forward 5 feet as the generator is tilted to a maximum angle of 45° from the vertical.

III. WORK PLANNED FOR THE NEXT REPORT PERIOD

- A. Fabrication of the prototype will be continued.
- B. Testing of the 1/8-scale model generator and barge will be initiated to obtain more data on nonvertical projection and generator motion during the vortex-generation period.